

AVIATION

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Seville-Sperry Racer (380 hp. Wright), an Army entry in the Pulitzer Race, warming up for a trial flight.

VOLUME
XIII

SPECIAL FEATURES

Number
14

THE PULITZER RACE ENTRIES DESCRIBED
THE ENTRIES IN THE CURTISS TROPHY RACE.
RULES OF THE CURTISS MARINE FLYING TROPHY RACE

THE GARDNER, MOFFAT CO., INC.
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225 FOURTH AVENUE, NEW YORK

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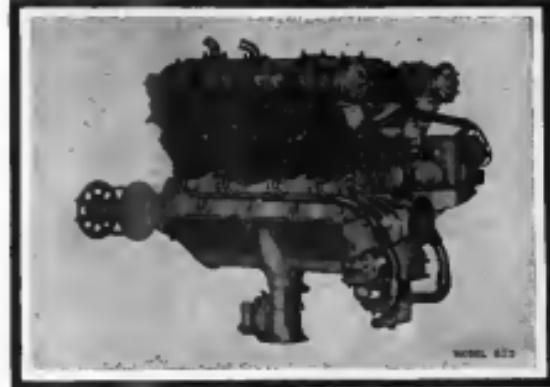
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OCTOBER 2, 1922

AVIATION

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No. 14

AVIATION

The Detroit Aviation Meet

THE Detroit Aviation Meet, which opens on October 7 with the Detroit Aerial Water Derby, including the Central Marine Flying Trophy, and which comes to a close on October 14 with the Pulitzer Trophy race, America's speed classic, promises to be not only the most important flying meet of the year, but also the biggest event of its kind ever staged in this country.

With six set distinct events, calling for practically all types of aircraft concerned, from flying boats and float planes to multi-engined large capacity machines, and from flight competition shapes to the high speed races, the Detroit meet will afford the public an unparalleled opportunity of seeing in flight for principal and most modern aircraft we possess.

Leaving aside the purely spectacular features of the meet, and in particular of the Pulitzer Trophy race, where it is likely that new world's speed records will be established, the Detroit gathering may be expected to give the aeronautical world some extremely practical results. The development of the powerfully required rudder will be of great benefit to the Air Service as it will mark a new advance in pursuit ship design. A glance at the norms illustrated in this issue should bear out this statement. The prevalence of machines with cantilever or semi-cantilever wings seems to indicate that this type of construction has emerged from the experimental stage in which it was a year or so ago, when its very principles elicited much controversy.

What is very noticeable in all designs, is the careful manner in which all emarginances are streamlined and how the whole structure of the airplane is being increasingly enclosed in a single streamline body. The significance of having several single radiators set into the wings is among all aeroplanes probably the most original contribution of the forthcoming Pulitzer Races, and the behavior of these radiators will be worth close watching.

An Echo of the Gordon Bennett Race

EVERWHERE on this issue there is printed a letter from E. H. Bouswell, the well known balloonist who was one of the American competitors in the last Gordon Bennett Balloon Race, held at Geneva, Switzerland. Our readers will remember that some time ago he told the winner of this race was officially announced, a delay which was due to the Belgian aviator, Louis E. de Mayer, having his balloon carried away by the wind after starting. The balloon was eventually found, however, and shipped back to Zurich together with the barograph and the log book, whereby the Belgian pilot's claim to having carried the greatest distance was substantiated.

We due respect to Captain Bouswell's opinion, we are inclined to doubt that he was deprived of the victory through what could not be considered else but foul play—were it true. We cannot believe that the entire contest committee of the

Aero Club of Switzerland was composed of such poor sportsmen as to juggle with the regulations in order to award the victory to a European instead just because an American victory would have meant the end of the Gordon Bennett balloon races. Nor is it apparent to us that the Swiss sportsmen who handled the event in such a splendid manner should have been particularly influenced in favor of the French and Belgian entrants. If J. Ferry, an American, was disqualified in the 1912 race from Stuttgart, it should also be remembered that in the 1906 race—which by a curious coincidence also started from Stuttgart and was managed by the same Swiss Aero Club—it was the French entrant Alfred Leblanc who was disqualified for losing his balloon in the Carpathian mountains. Hence it would seem that the rule works both ways.

De Mayer "lost" his balloon only temporarily, and when it eventually turned up with the discreditable evidence of his flight, it seems logical that he should have been awarded the cup.

It may be argued that the rules of the International Aeroplane Federation are not quite explicit on this point. Cases without precedent occur in most law and the setting of a precedent which becomes necessary often causes hard feeling. In the case of Captain Honeywell it is evidently too late to lodge a protest with the Aero Club of Switzerland—this should have been done, if it was not, right after the race.

Weight Estimate in Preliminary Design

WHEN the preliminary design of an airplane has been laid down it is a difficult matter to make changes in the final design. Still more difficult is it to make changes in process of construction.

It is a peculiar thing that most new airplane designs require a certain amount of modification, or fail to live up to the estimate of performance because of an error in the weight estimate. The weight, as a rule, seems to run higher than the preliminary figures would show. This however follows in many instances, and always a decrease in performance.

In view of this well known fact, it is interesting to recall that the Bureau of Aeronautics, Navy Department, has developed a particularly efficient system of checking weights in process of design. While this checking system adds a good deal to the work of the drafting office, it has the great advantage of avoiding many disappointments at the trial flights.

We believe that almost as useful a weight estimate in the preliminary design would be well worth applying in all cases. The experience of designers indicates that with careful stress analysis, dimensioned sketches of most of the main parts, and—last but not least—generally careful work, very accurate estimates of weight can be obtained in aircraft design.



Map showing the course to be flown by the planes participating in the flying events of the Detroit Aviation Meet, Oct. 7 and Oct. 12-13.

aimed without restriction to the consequences that result therefrom." (F.A.I. Rules, Art. 7).

8. Rules of the Race

(a) Upon receiving the starting signal for the start, pilots shall hold a straight course and not cross or attempt to cross in front of the planes in other runs.

(b) From a standing start contestants will fly around the first four laps of the course, and during laps 5, 6 and 7 will be obliged to alight on the water and while running along the surface of the water and before entering the water in either power direction, the water controls which shall be designated by marked markers on both sides. Note: [There will be only one water control in the shape of a bar-sap line]. The entrance into and exit from this control will be located sufficiently near the turning mark that anything but normal landing speeds or normal turning speeds will overturn the contestants in a reasonable time.

(c) While within the marks bounding the water controls, the contestants must maintain constant contact between the

water and land surfaces of the principal flotation gear (wing or tail portion), or water saddle, or any other adjustable, movable or flexible attachment, if not sufficient contact with the water under this condition.

(d) A. When overtaking both planes being in the air, shall be allowed a trix course, in order that it may not in any way impede or interfere with the faster overtaking plane.

(e) A plane overtaking a slower plane, both planes being in the air, shall wait until or attempt to pass between the overtaking plane and its object of pursuit, or vice versa, in power direction, the water controls which will be designated by marked markers on both sides. Note: [There will be only one water control in the shape of a bar-sap line]. The entrance into and exit from this control will be located sufficiently near the turning mark that anything but normal landing speeds or normal turning speeds will overturn the contestants in a reasonable time.

(f) While within the marks bounding the water controls, the contestants must maintain constant contact between the

(g) No contestants shall be permitted to "slope" the foot with plane and, either, or another highly explosive liquids, anti-knock fluids may be used.

9. Prizes

No protest shall be considered unless presented in writing to the Contest Committee of Detroit Aviation Society within twenty-four hours after the finish of the race. (F.A.I. Rules, 76, 79, 88). (Appeal). See F.A.I. Rules, Art. 158-170.

10. Numbers

Each plane shall have a number assigned to it by the Contest Committee, painted on the bottom surface of lower wing and on each side of the fuselage, dear of the wing, in characters as large as possible. It shall have no other markings over twelve inches in height.

11. Discrepancies

"Competitors are forbidden to display on their apparatus or material any commercial advertisement except the trademark of the constructor of the apparatus." (F.A.I. Rules, Art. 89).

12. Number of Contests

Maximum number of contestants SIXTEEN.
Minimum number of contestants FIFTEEN.

Additional Prizes

The (to be announced later) prizes for greater air speed will be awarded to the contestants who during the Curtiss Marine Trophy race, complete laps 2, 3 and 4 in the shortest total elapsed time. (The first lap is not included because of the standing start).

Additional prizes will be awarded for Class or Invitation races to be announced by the Contest Committee of the Detroit Aviation Society after entries have closed.

Exceptions

Strengthening which does not alter the structure of the part or parts concerned.

Markings eligible for class races are determined by the above rule and their exceptions.

1. Strengthening which does not alter the structure of the part or parts concerned.

2. Motors may be equipped with any make or design of propeller, radiator, spark plug, carburetor, including intake manifold, exhaust nozzle, gaskets and oil systems.

Prizes

The Contest Committee of the Detroit Aviation Society may award any of the contests to compete for a special prize.

Note: The word "plane" as used in these rules means flying boats or seaplanes.

Characteristics of the Aircraft Entered in the Curtiss Marine Flying Trophy Race

Saturday, Oct. 7, 1922

The opening event of the Detroit Aviation Meet is the race for the Curtiss Marine Flying Trophy donated by Glenn H. Curtiss. This contest is open to seaplanes of the float and boat types only, and is specially designed for water races, drawn up with special view to the progress achieved in seaplane construction.

In this year's race the U. S. Navy has entered eleven seaplanes, the characteristics of which are as follows:

Fairchild FE-III

Type VICH is the standard Vought two-seater advanced training plane now used by the Navy as an observation plane

and fitted with a pontoon. This seaplane was designed and built by Charles Vought in 1918 and is capable of standard takeoff from the water. The Fairchild FE-III is a two-seater land plane for general observation duty, and as a two-seater land plane for general observation duty, and as a two-seater seaplane as an observation plane to be carried aboard ships. Vought planes of this type are now on board the Maryland and have been successfully test-flown from the Maryland's catapult. The Wright K-5 cpl. engine runs at a maximum of the standard 180 hp at 2200 engine rpm by the same firm, the manufacturer remaining essentially in high compression piston, high lift cam and other alterations which permit the engine



Curtiss JN-4 (400 hp. Curtiss C-12E), NACA entry No. 4 in the Curtiss Trophy race. Pilot, Lt. T. B. Lee, U.S.N., at Ed. L. H. Sundstrom, U.S.M.C.



Curtiss HME (2,335 hp. Liberty 12), Navy entry No. 2 in the Curtiss Trophy race. Pilot: Lt. E. L. Jones, U.S.N.

to develop between 235 and 245 hp. at 2000 r.p.m. revolutions. The high compression R-13 engine is designed for boosted fuel

CHARACTERISTICS

Type:	Single-seat biplane
Horse power and weight:	16 P. 15 lb.
Weight, lb. 1,600	
Length, ft. 24	
Span, ft. 36	
Gross weight, lb. 2,335	
Length, ft. 24	
Span, ft. 36	
Angle of incidence, 4° upper 1 deg. 45 min. lower 2 deg. 12 min.	
Wing area, 212 sq. ft.	
Aspect ratio, 4.0	
Gross weight, 2,335 lb.	
Length, ft. 24	
Span, ft. 36	
Height, ft. 8.5	
Pilot: Lt. W. A. Miller, U. S. N.	

Curtiss H.E.

The H.E. is a Curtiss designed and built seaplane biplane built in 1919 as an answer to high performance German seaplanes which were interfering with the bombing operations conducted against the German submarine bases on the Belgian coast. The problem was to develop a fast two-seater seaplane with a single Liberty engine. In order to change the design of the H.E. type, it was never put into production, and the sample plane built in 1919 has been reconditioned and entered in the Curtiss Marine Trophy Race, but fitted with a special high compression Liberty engine. This is a standard Liberty engine with high compression pistons and new valves and should develop over 425 hp. on boosted fuel. The seaplane was designed by W. L. Gilmore of the Curtiss Aeroplane & Motor Corp. in cooperation with Maj. B. L. Smith, U. S. Marine Corps.

CHARACTERISTICS

Type:	Water float biplane
Horse power and weight:	16 P. 15 lb.
Weight, lb. 1,600	
Length, ft. 24	
Span, ft. 36	
Gross weight, lb. 2,335	
Length, ft. 24	
Span, ft. 36	
Angle of incidence, 4°	
Wing area, 212 sq. ft.	
Aspect ratio, 4.0	
Gross weight, 2,335 lb.	
Length, ft. 24	
Span, ft. 36	
Height, ft. 8.5	
Pilot: Capt. A. J. Williams, U. S. N.	

Curtiss H.E.

The H.E. is a standard twin Liberty engined biplane built used during the War both by the American and British Navies for submarine patrol and convoy duty. The plane was designed by D. H. Curtiss and built by the Curtiss Aeroplane & Motor Corp. in 1919. The Navy Department has a large number of these planes on hand and the one entered in the race is standard in all respects except that the Liberty engines have been replaced with special high compression pistons. The H.E. will be flown over the Naval Aircraft Factory to Detroit for the race, following the Hudson River, the Lakes of New York State to the Great Lakes.

CHARACTERISTICS

Type:	Two-seat biplane
Horse power and weight:	16 P. 15 lb.
Weight, lb. 1,600	
Length, ft. 24	
Span, ft. 36	

Curtiss H.E. (425 hp. Curtiss D-12) Navy entry No. 10 in the Curtiss Trophy Race. Pilot: Capt. A. J. Williams, U.S.N.

Model:	2 B. 1 bi.
Horse power:	240 hp.
Weight:	1,600 lb.
Length:	24 ft.
Span:	36 ft.
Gross weight:	2,335 lb.
Length:	24 ft.
Span:	36 ft.
Height:	8.5 ft.
Pilot:	Lt. W. A. Miller, U. S. N.

Coldwater 4D

The 4D is a masterpiece designed by Edson Goldstein and built by the Goldstein Aircraft Corp. in 1928. It was built for the Navy's 1928 trophy race, and is considered to be one of the greatest planes ever built. It is believed to be the greatest plane in the country and is of considerable technical interest for this reason. It is fitted with a single Liberty engine mounted in the fuselage, which drives by means of a long gear a propeller which is situated immediately behind the wings. The fuselage or tail structure of the seaplane extends through the center of the gear case carrying the propeller.

CHARACTERISTICS

Type:	Single-seat biplane
Horse power and weight:	16 P. 15 lb.
Weight, lb. 1,600	
Length, ft. 24	
Span, ft. 36	
Gross weight, lb. 2,335	
Length, ft. 24	
Span, ft. 36	
Height:	8.5 ft.
Pilot:	Lt. W. A. Miller, U. S. N.

Fairchild D-8

The D-8 is a new type of Young observation seaplane being developed by the Chance-Vought Corp. for the Navy Department as a replacement for the standard VEF Young now used on ships for catapult launching. The plane is equipped with a new Armstrong 550 hp. engine which presents a new feature in aircrafting engines in that it has reversible cylinder heads.

CHARACTERISTICS

Type:	Two-seat float biplane
Horse power and weight:	16 P. 15 lb.
Weight, lb. 1,600	
Length, ft. 24	
Span, ft. 36	
Gross weight, lb. 2,335	
Length, ft. 24	
Span, ft. 36	
Height:	8.5 ft.
Pilot:	Lt. W. A. Miller, U. S. N.

Curtiss 18F

Model 18F biplane triplane was designed by C. B. Krikorian and built in 1928 by the Curtiss Aeroplane and Motor Corp. as a two-seater combat plane of maximum performance. Had



Curtiss 18F (425 hp. Curtiss D-12) Navy entry No. 10 in the Curtiss Trophy Race. Pilot: Capt. A. J. Williams, U.S.N.

its War conditions it is likely that this type would have been put into production for use on the Western Front. As it was, the Curtiss plane made on trials a high speed of 202 m.p.h., which was then a world's record for any type of seaplane, and is still believed a world's record for a biplane.

For the purpose of the Curtiss Marine Trophy Race two of these seaplanes which were in space have been reconditioned and fitted with pontoons to convert them to seaplanes. They are fitted with the Curtiss CD-1, 400 hp., eight 33-cyl. engine

spare parts are pre-arranged. The 18F is the same plane equipped with the Armstrong 550 hp. engine.

The 18B is the same. The plane presented with a Lawrence air-cooled engine, but given special racing wings, and the 18C is the same as the 18B except that the Wright 2B, 225 hp. engine has been substituted.

These four planes constitute then a full-scale experiment of the greatest technical interest in the Navy, using three different wings and two different designs of wing. The success of the Curtiss Marine Trophy Race has been used to try out



Navy Curtiss 18F (425 hp. Lawrence 550), Navy entry No. 6 in the Curtiss Trophy Race. Pilot: Lt. S. W. Collier, U. S.N.

especially designed for this seaplane. These triplanes are believed to be the only triplanes in the country and are of considerable technical interest at this moment.

CHARACTERISTICS

Type:	Three-seat float triplane
Horse power and weight:	16 P. 15 lb.
Weight, lb. 1,600	
Length, ft. 24	
Span, ft. 36	
Gross weight, lb. 2,335	
Length, ft. 24	
Span, ft. 36	
Height:	8.5 ft.
Pilot:	Lt. W. A. Miller, U. S. N.

Fairchild 2B

The 2B is a standard twin Liberty engined biplane built used during the War both by the American and British Navies for submarine patrol and convoy duty. The plane was designed by D. H. Curtiss and built by the Curtiss Aeroplane & Motor Corp. in 1919. The Navy Department has a large number of these planes on hand and the one entered in the race is standard in all respects except that the Liberty engines have been replaced with special high compression pistons. The 2B will be flown over the Naval Aircraft Factory to Detroit for the race, following the Hudson River, the Lakes of New York State to the Great Lakes.

CHARACTERISTICS

Type:	Two-seat biplane
Horse power and weight:	16 P. 15 lb.
Weight, lb. 1,600	
Length, ft. 24	
Span, ft. 36	
Gross weight:	2,335 lb.
Length:	24 ft.
Span:	36 ft.
Height:	8.5 ft.
Pilot:	Lt. W. A. Miller, U. S. N.

Types 2B, 2C, and 2D, and 2E, and 2F are variations of the Navy's planned combat plane type 2B designed earlier. Cdr. J. C. Ellsworth by the Design Section of the Bureau of Aeronautics and built at the Naval Aircraft Factory. The 2B planes were designed to give the smallest and most compact planform to the maximum facilities for take-down and erection aboard ship, and to make possible the use of wings which are disassembled in facilitating rapid repair. The 2B is carried on the lower wing and is made detachable so that in case of fire, due to an unnecessary bullet, the pilot can pull a release which will drop the tank and its inflammable contents clear of the machine. Another unique feature is the presence of interchangeable landing gear so that the 2B planes may be used with land wheels on an ordinary land plane, as well as with floats on an ordinary seaplane.

The 2B is equipped with a new Lawrence air-cooled radial engine rated at 225 hp. This is the last word in air-cooled engine development and the race is considered an excellent place to give this engine a severe tryout. The engine has been developed for the Navy especially for the purposes of stepdown warships where maximum weight and the greatest

EDITORIAL NOTE

Owing to the restrictions of space, the characteristics of the aircraft entered in the races, and the relative rates, for the Detroit News-Aerial Mail Trophy, the Aviation Country Club's Detroit Trophy (Oct. 23), and the Liberty League Builders' Trophy (Oct. 15) will be published in the Oct. 9 issue of AVIATION.

Affaires, 8,000 sq. ft.
Operational strength, 12,000 ft.
Pax, 400 sq. ft.
Fuel, 400 cu. ft.
Water tank, 100 cu. ft.
Tires, 100 cu. ft.
Gear, 100 cu. ft.
Landing gear, 100 cu. ft.
Cabin, 200 cu. ft.
Guns, 200 cu. ft.

The Navy-Curtiss Triplane

This triplane designed and built by the Curtiss Aeroplane and Motor Corp., was brought out in 1929 as an American entry for the Gordon Bennett race held in France. It was designed by W. L. Ulmer, with the aid and supervision of Thomas M. Smith, who had been in charge of the design of the biplane which had won the Gordon Bennett race at a speed of around 300 m.p.h. Under trials carried on in the fields on Long Island, this landing speed was found to be entirely practicable, but on arrival in France, due to the condition of the fields and to the shifting of the starting point from one field to another, it was necessary to add a second wing in order to reduce the landing speed. This was obtained and a series of low flights at 90 m.p.h. resulted. On its return to the United States, it was prepared for entry in the Pulitzer



The Navy E.H.-2 (Bee-Line) racer (350 hp Wright) entered in the Pulitzer race. *Pilot*, Ed S. W. Orlinsky, U.S.N., or Lt. D. Parkinson.

Race in Omaha in 1931. Again due to extremely poor flying conditions, a second wing was added, thus reducing the landing speed to a trim of 70 m.p.h.

As a triplane that can easily establish a straight flight speed of around 300 m.p.h., and as a triplane, a speed of 180 m.p.h. This was on Roosevelt Field on Long Island in the Fall of 1932.

The Navy-Curtiss Triplane will appear in Detroit as potential entry in the 1933 Pulitzer race. It will be powered by a 435 hp C12 journal engine, manufactured by the Curtiss Aeroplane and Motor Corp. By closing the intake, the propeller turns at three times that of the engine's speed.

The Triplane has a multiple spar wing, which is described more fully under the Army entry. Its fuselage is of monocoque, laid out constructed of Corten steel. A characteristic of the Triplane is the fact that the engine is equipped with a fail-safe motor, mounted attached to the fuselage.

The color of the Triplane will be as follows: red fuselage, silver wings, slate black.

CHARACTERISTICS

Tens. triplane.
Span, 30 ft. 0 in.
Length, 22 ft. 0 in.
Height, 8 ft. 0 in.
Wing area, 175 sq. ft.
Weight empty, 1,900 lbs.
Max. weight, 2,800 lbs. at level
flying speed, 1,400 lbs. at 100 m.p.h.
Cabin容积, 2 cu. ft.
Fuel容积, 10 cu. ft.
Guns, 200 cu. ft.

Wing area, 175 ft. 0 in.

Overall length, 22 ft. 0 in.

Height, 8 ft. 0 in.

Wing area, 175 sq. ft.

Weight empty, 1,900 lbs.

Max. weight, 2,800 lbs. at 100 m.p.h.

Cabin容积, 2 cu. ft.

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